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NEWS RELEASE

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Bunker side garden serves as test bed for small-scale Afghan agriculture

KANDARHAR AIRFIELD, Afghanistan – It is not the biggest farm in Afghanistan but it is one of the newest and perhaps, one of the more experimental.

Tucked away next to a shaded break area and concrete bunker on the east side of the U.S. Army Corps of Engineers Afghanistan Engineer District - South compound on Kandahar Airfield, half of a 300-gallon plastic water tank sits on a shipping pallet. Mounted on another pallet, about a foot above the tank is the other half filled with golf ball-sized gravel. The lower tank is about 80 percent filled with water; and a system of recycled garden hoses and household plumbing keeps the water flowing from the lower tank onto the rocks in the upper.

Sticking through the stones are plants - lettuce, peppers, broccoli and rebar-staked tomato plants. A couple dozen tadpoles graze on the algae growing in the lower tank's sides and bottom.

Penny Coulon, a district contracting officer representative, combined hydroponics and aquaculture to create the South District's first-ever aquaponics garden.

Penny Coulon, a South District contracting officer representative, checks for wilting leaves on a recently sown patch of lettuce. She combined hydroponic gardening and aquaculture - raising of aquatic animals - to create the South District's first-ever aquaponics garden. (USACE photo by Dave Melancon.)

Coulon, who deployed to Afghanistan from the USACE Sacramento District, said she stumbled upon the idea for an aquaponics garden in Afghanistan while researching different gardening systems for her home garden. Aquaponics seemed ideal because of its simplicity, chemical-free fertilization, fewer weeds and insects and no bending requirement.

"I figured I could kill two birds with one stone," she said. "I can have the fish and I could have vegetables as well. Then, I thought, this could work here."

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Aquaponics is an entire food production system combing aquaculture -- raising of aquatic animals such as snails, frogs, fish, crayfish or prawns in tanks -- with hydroponics, a water-based plant cultivation method. The animals -- in this case native Afghan tadpoles -- live in the water, food plants grow in the rock.

"The fish produce waste. You then pump that water to the plants," Coulon said. "The plants clean the water because they use the fish waste as their fertilizer. The clean water is then returned to the fish."

The system also conserves water which is especially vital in Afghanistan, she added.

"It's a closed-loop system so once you fill the tank you are truly not using any water except for evaporation because it keeps circulating through," she said.

The fish will come from a nearby lake later this spring. Until they arrive, Coulon is using tadpoles and vitamin B-12 as a plant fertilizer as a stop-gap measure. She said she will feed the fish with duckweed.

"The fish will make a whole system," she said. Wouldn't a nice fish dinner be good?"

The fish, depending upon the species, will be ready to eat in about six months, so it may be a bit premature to start bringing out the recipes and spices, she warned.

The garden has been going for only a few days but the plants are looking strong with little evidence of wilting, Coulon said.

"So far it's looking pretty good. I think the plants are taking. If they weren't they would begin to wilt," she said. "I'm feeling pretty positive that it will take off."

The South District's first-ever aquaponics garden units sit next to a break area and bunker on the east side of the headquarters compound on Kandahar Airfield. Parts for the self-contained system came for a company that specializes in aquaponics, a construction contractor working on KAF and a home gardening store. The rear unit will remain on the USACE compound; the second will be moved to the Afghan bazaar school on KAF. (USACE photo by Dave Melancon)

Store-bought Aquaponic systems can range in price from about $200 for a complete starter kit to several thousand dollars for larger, more elaborate systems, she said.

Many parts for Coulon's two systems were donated by Backyard Aquaponics, Inc. of Australia, she said. The Yenigun Construction Co., a Turkish building contractor with several projects underway on KAF, provided the rock and the tanks. Coulon brought the old the garden hose and PVC pipes and hardware from home.

John Caudill, of Watkinsville, Ga., Operations and Maintenance Section office engineer, helped build the systems, Coulon said. He will ensure the pumps keep running and the plants and tadpoles are thriving while she is on off-site assignments and leave.

If successful, one unit will remain on the USACE compound and a second will be taken to the Afghan bazaar school on KAF, Coulon said.

“Hopefully we can teach some kids about Aquaponics and for science classes,” she said.

“I’m excited about it. I hope it produces nice organic vegetables and will be easy to maintain,” she said. “I’m hoping the Afghans can take this idea and run with it.”

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